

REMARKS

This application has been reviewed in light of the Office Action mailed on March 15, 2004. Claims 1-10 are pending in the application with Claim 1 being in independent form. By the present amendment, Claim 1 has been amended. No new matter or issues are believed to be introduced by the amendments.

In the Office Action, Claims 1-3 were rejected under 35 U.S.C. §103(a) over U.S. Patent No. 5,084,085 issued to Morad on January 21, 1992 ("Morad") in view of Stewart C. Bushong; Magnetic Resonance Imaging, 2nd edition, pp. 148-150, Mosby-Year Book, Inc., 1996 ("Bushong") and further in view of Yoshiaki (JP 11221200).

Claim 1 has been amended in a manner which is believed to better define Applicants' invention and to overcome the rejection. Support for the amendments to Claim 1 can be found in the Figures. Specifically, FIGs. 2 and 4-7.

Claim 1 has been amended to recite "A magnetic resonance imaging apparatus (1) comprising a gradient coil assembly (3, 4, 5) for generating gradient magnetic fields in an imaging volume, the gradient coil assembly (3, 4, 5) comprising at least three gradient coils (3, 4, 5) for generating three different gradient magnetic fields, wherein a conductive element (71, 72, 73) is provided in close proximity to at least one of the gradient coils (3, 4, 5) in order to compensate self-induced eddy currents in the gradient coil assembly (3, 4, 5), wherein each of the gradient coils comprise a pair of coil elements arranged in different planar axis and connected to an independently controlled power supply, and wherein the conductive element (71, 72, 73) encompasses a substantially smaller surface area than the at least one of the gradient coils (3, 4, 5)." (Emphasis added)

Neither Morad, Bushong, nor Yoshiaki disclose or suggest at least the newly added limitations to Claim 1. Morad discloses a compact shield gradient coil system having a first set of gradient coils coaxially surrounded by a conducting shield. A second set of gradient coils coaxially surrounds the conducting shield. The first and second sets of gradient coils and the conducting shield are therefore coaxially arranged and produce a linear gradient field inside the imaging volume. (See, e.g., FIG. 1 and col. 2, line 64 to col. 3, line 6) The surface area encompassed by the first set of gradient coils is substantially equal to the surface area encompassed by the conducting shield. Further, the surface area encompassed by the second set of gradient coils is substantially equal to the surface area encompassed by the conducting shield. (See FIG. 1) Accordingly, Morad does not disclose or suggest that the conducting shield (analogous to Applicants' conductive element) encompasses a substantially smaller surface area than the first or second set of gradient coils (analogous to Applicants' gradient coils), as recited by Applicants' Claim 1.

Bushong does not cure the deficiencies of Morad. Bushong discloses at the bottom of page 149 that the three pairs of gradient coils are energized simultaneously for producing a single composite magnetic field and to obtain an oblique image. Bushong does not disclose or suggest a conductive element as recited by Applicants' Claim 1, and therefore Bushong does not disclose or suggest a conductive element having the features recited by Applicants' Claim 1.

Yoshiaki does not cure the deficiencies of Morad and Bushong. Yoshiaki does not disclose or suggest a conductive element as recited by Applicants' Claim 1, and therefore Yoshiaki does not disclose or suggest a conductive element having the features recited by

Applicants' Claim 1. Accordingly, withdrawal of the rejection under 35 U.S.C. §103(a) and allowance of Claim 1 are respectfully requested.

Claims 2-3 depend from Claim 1, and therefore include the limitations of Claim 1. Accordingly, for the same reasons given for Claim 1, Claims 2-3 are believed to contain patentable subject matter. Hence, withdrawal of the rejection under 35 U.S.C. §103(a) and allowance of Claims 2-3 are respectfully requested.

Claims 4-6 and 10 were rejected under 35 U.S.C. §103(a) over Morad, Bushong and Yoshiaki as applied to Claims 1-3 above, and further in view of Doty (WO 94/01785).

Claims 4-6 and 10 depend from Claim 1, and therefore include the limitations of Claim 1. Accordingly, for the same reasons given for Claim 1, Claims 4-6 and 10 are believed to contain patentable subject matter. Hence, withdrawal of the rejection under 35 U.S.C. §103(a) and allowance of Claims 4-6 and 10 are respectfully requested.

Claims 8 and 9 were rejected under 35 U.S.C. §103(a) over Morad, Bushong and Yoshiaki as applied to Claims 1-3 above, and further in view of Mulder et al. (WO 00/25146).

Claims 8 and 9 depend from Claim 1, and therefore include the limitations of Claim 1. Accordingly, for the same reasons given for Claim 1, Claims 8 and 9 are believed to contain patentable subject matter. Hence, withdrawal of the rejection under 35 U.S.C. §103(a) and allowance of Claims 8 and 9 are respectfully requested.

Claim 7 was rejected under 35 U.S.C. §103(a) over Morad, Bushong, Yoshiaki and Doty as applied to Claims 4-6 and 10, and further in view of U.S. Patent No. 6,509,555 issued to Riess et al.

Claim 7 depends from Claim 1, and therefore includes the limitations of Claim 1. Accordingly, for the same reasons given for Claim 1, Claim 7 is believed to contain patentable subject matter. Hence, withdrawal of the rejection under 35 U.S.C. §103(a) and allowance of Claim 7 are respectfully requested.

In view of the foregoing amendments and remarks, it is respectfully submitted that all claims presently pending in the application, namely, Claims 1-10, are believed to be in condition for allowance and patentably distinguishable over the art of record.

If the Examiner should have any questions concerning this communication or feels that an interview would be helpful, the Examiner is requested to call John Vodopia, Esq., Intellectual Property Counsel, Philips Electronics North America, at 914-333-9627.

Respectfully submitted,



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